

CLAIMS

What is claimed is:

1. 1. A method of fabricating an electronics package, the method comprising:
  - 2 securing a die to one side of a interposer;
  - 3 securing a pin carrier to an opposing side of the interposer, the pin carrier including a cavity positioned against the interposer opposite to the die;
  - 5 securing an electronic component to the interposer such that the electronic component is positioned within the cavity in the pin carrier;
  - 7 at least partially filling the cavity in the pin carrier with an encapsulant
  - 8 sufficient to provide mechanical support to the interposer.
  
1. 2. The method recited in claim 1, wherein securing the pin carrier to the interposer and securing the electronic component to the interposer are done substantially simultaneously.
  
1. 3. The method recited in claim 1, wherein securing a die to one side of an interposer includes forming a C4 joint between the die and interposer.
  
1. 4. The method recited in claim 3, wherein securing a die to one side of an interposer includes underfilling the C4 joint between the die and interposer with an epoxy.
  
1. 5. The method recited in claim 1, wherein at least partially filling the cavity in the pin carrier with an encapsulant includes filling the entire cavity with an encapsulant.

1    6.    The method recited in claim 1, wherein at least partially filling the cavity in  
2    the pin carrier with an encapsulant includes bonding the encapsulant to the pin  
3    carrier.

1    7.    An electronic package comprising:  
2         an interposer having an upper surface and a lower surface;  
3         a die secured to the upper surface of the interposer;  
4         a pin carrier having a cavity, the pin carrier being secured to the lower  
5    surface of the interposer such that the cavity is against the interposer opposite to the  
6    die;  
7         an electronic component secured to the lower surface of the interposer, the  
8    electronic component being positioned within the cavity in the pin carrier; and  
9         an encapsulant at least partially filling the cavity to mechanically support the  
10   interposer during mechanical loading the package.

1    8.    The electronic package of claim 7, wherein the interposer is a composite  
2    metal and organic material.

1    9.    The electronic package of claim 7, wherein the electronic component is a  
2    capacitor and the interposer is thin enough to minimize the inductive loop between  
3    the capacitor and the die.

1    10.   The electronic package of claim 7, wherein the encapsulant is an epoxy.

1    11.   The electronic package of claim 7, wherein the pin carrier is attached to the  
2    interposer using a ball grid array of solder balls.

1    12.   The electronic package of claim 7, wherein the cavity in the pin carrier  
2    includes a perimeter and the die includes a perimeter substantially aligned with the  
3    perimeter of the cavity.

1    13.   The electronic package of claim 7, wherein the cavity in the pin carrier  
2    includes a perimeter and the die includes a perimeter that is smaller than the  
3    perimeter of the cavity.

1    14.   The electronic package of claim 7, wherein the interposer has a thickness  
2    that is less than 1 mm.

1    15.   A data processing system comprising:  
2       a bus;  
3       a memory coupled to the bus;  
4       a processor; and  
5       a package including an interposer, a pin carrier and an electronic component,  
6    the processor being secured to one side of the interposer and the pin carrier being  
7    secured to other side of the interposer, the pin carrier electrically connecting the  
8    processor to the bus and including a cavity that is against the interposer opposite to  
9    the processor, the electronic component being secured to the interposer within the  
10   cavity in the pin carrier, the package further including an encapsulant that at least  
11   partially fills the cavity in the pin carrier to mechanically support the interposer  
12   during operation of the data processing system.

1    16.   The data processing system of claim 15, wherein the electronic component is  
2    a capacitor.

1    17.   The data processing system of claim 15, wherein the interposer has a  
2    thickness less than 1mm.

1    18. An electronic package comprising:  
2        an interposer;  
3        a die secured to the interposer;  
4        a pin carrier secured to the interposer, the pin carrier including a cavity  
5        opposite to the die;  
6        an electronic component secured to the interposer within the cavity; and  
7        an encapsulant at least partially filling the cavity.

1    19. The electronic package of claim 18, wherein the interposer has a thickness  
2        less than 1 mm.

1    20. The electronic package of claim 18, wherein the encapsulant is an epoxy.